

WHAT IS CLAIMED IS:

1. A magnetron comprising:
 - an anode cylinder;
 - a cathode disposed within the anode cylinder;
 - a plurality of vanes extending inward from the anode cylinder so as to form a plurality of resonant cavities;
 - an electrically insulative magnetron chamber wall coupled to the anode;
 - an antenna, coupled to at least one of the vanes, located within an evacuated chamber of the magnetron which provides an output of microwaves passing through the electrically insulative magnetron chamber wall when the magnetron is operating; and
 - at least one baffle disposed in lines of sight between the cathode and the electrically insulative magnetron chamber wall including substantially all of a periphery and a top of the electrically insulative magnetron chamber wall through which the microwaves pass with metallic material emitted from the cathode being deposited on the at least one baffle instead of on the electrically insulative magnetron chamber wall with the at least one baffle comprising at least one planar plate which is substantially orthogonal to a longitudinal axis of the magnetron.

2. A magnetron in accordance with claim 1 comprising:
a pair of annular magnetic pole pieces which are connected to the anode which focus a magnetic field axially along the cathode, and
the at least one baffle is connected to one of the pole pieces.
3. A magnetron in accordance with claim 1 wherein:
the at least one baffle is connected to the antenna.
4. A magnetron in accordance with claim 3 comprising:
a closed conductive wall having a longitudinal axis coaxial with a longitudinal axis of the antenna which is joined to the planar plate of the at least one baffle, the closed wall and a segment of the antenna suppressing at least one undesired harmonic of a fundamental frequency of microwave resonance of the plurality of resonant cavities.
5. A magnetron in accordance with claim 4 wherein:
the closed wall and the segment of the antenna suppresses a 5th harmonic of the fundamental frequency.
6. A magnetron in accordance with claim 1 wherein:
the electrically insulative magnetron chamber wall comprises a ceramic dome.

7. A magnetron in accordance with claim 2 wherein:
the electrically insulative magnetron chamber wall comprises a ceramic dome.

8. A magnetron in accordance with claim 3 wherein:
the electrically insulative magnetron chamber wall comprises a ceramic dome.

9. A magnetron in accordance with claim 4 wherein:
the electrically insulative magnetron chamber wall comprises a ceramic dome.

10. A magnetron in accordance with claim 5 wherein:
the electrically insulative magnetron chamber wall comprises a ceramic dome.

11. A magnetron in accordance with claim 8 comprising:
a closed conductive wall having a longitudinal axis coaxial with a longitudinal axis of the antenna which is joined to the planar plate of the at least one baffle, the closed wall and a segment of the antenna suppressing at least one undesired harmonic of a fundamental frequency of microwave resonance of the plurality of resonant cavities.

12. A magnetron in accordance with claim 11 wherein:
the closed wall and the segment of the antenna suppresses a 5th harmonic of the fundamental frequency.
13. A magnetron in accordance with claim 4 wherein:
the closed conductive wall is substantially equal in length to one quarter of a wavelength of the undesired harmonic.
14. A magnetron in accordance with claim 8 wherein:
the closed conductive wall is substantially equal in length to one quarter of a wavelength of the undesired harmonic.
15. A magnetron in accordance with claim 12 wherein:
the closed conductive wall is substantially equal in length to one quarter of a wavelength of the undesired harmonic.
16. A method of operation of a magnetron including an anode cylinder, a cathode disposed within the anode cylinder, a plurality of vanes extending radially inside the anode which form a plurality of resonant cavities, an electrically insulative magnetron chamber wall coupled to the anode and an antenna coupled to at least one of the vanes located within an evacuated chamber of the magnetron which provides an output of microwaves passing through the

electrically insulative magnetron chamber wall when the magnetron is operating comprising:

providing at least one baffle disposed in lines of sight between the cathode and the electrically insulative magnetron chamber wall including substantially all of a periphery and a top of the electrically insulative magnetron chamber wall through which the microwaves pass with the at least one baffle comprising at least one planar plate which is substantially orthogonal to a longitudinal axis of the magnetron; and

activating the magnetron to produce an output of microwaves through the electrically insulative magnetron chamber wall with material being emitted from the cathode during the output of microwaves being deposited on the at least one baffle instead of on the electrically insulative magnetron chamber wall.

17. A method in accordance with claim 16 wherein:

the magnetron comprises a pair of annular pole pieces which are connected to the anode which focus a magnetic field axially along the cathode; and

the at least one baffle is connected to one of the pole pieces.

18. A method in accordance with claim 16 wherein:

the at least one baffle is connected to the antenna.

19. A method in accordance with claim 18 comprising:
a closed conductive wall having a longitudinal axis coaxial with a longitudinal axis of the antenna which is joined to the planar plate of the at least one baffle, the closed wall and a segment of the antenna suppressing at least one undesired harmonic of a fundamental frequency of microwave resonance of the plurality of resonant cavities.

20. A method in accordance with claim 19 wherein:
the closed wall and the segment of the antenna suppress a 5th harmonic of the fundamental frequency.

21. A method in accordance with claim 16 wherein:
the electrically insulative magnetron chamber wall comprises a ceramic dome.

22. A method in accordance with claim 17 wherein:
the electrically insulative magnetron chamber wall comprises a ceramic dome.

23. A method in accordance with claim 18 wherein:
the electrically insulative magnetron chamber wall comprises a ceramic dome.

24. A method in accordance with claim 19 wherein:
the electrically insulative magnetron chamber wall comprises a ceramic dome.
25. A method in accordance with claim 20 wherein:
the electrically insulative magnetron chamber wall comprises a ceramic dome.
26. A method in accordance with claim 19 wherein:
the closed conductive wall is substantially equal in length to one quarter of a wavelength of the undesired harmonic.
27. A method in accordance with claim 20 wherein:
the closed conductive wall is substantially equal in length to one quarter of a wavelength of the undesired harmonic.
28. A method in accordance with claim 24 wherein:
the closed conductive wall is substantially equal in length to one quarter of a wavelength of the undesired harmonic.

29. A magnetron comprising:

- an anode cylinder;
- a cathode disposed within the anode cylinder;
- a plurality of vanes extending inward from the anode cylinder so as to form a plurality of resonant cavities;
- an electrically insulative magnetron chamber wall coupled to the anode;
- an antenna, coupled to at least one of the vanes, located within an evacuated chamber of the magnetron which provides an output of microwaves passing through the electrically insulative magnetron chamber wall when the magnetron is operating; and
- at least one baffle disposed in lines of sight between the cathode and the electrically insulative magnetron chamber wall including substantially all of a periphery and a top of the electrically insulative magnetron chamber wall through which the microwaves pass with metallic material emitted from the cathode being deposited on the at least one baffle instead of on the electrically insulative magnetron chamber wall.

30. A method of operation of a magnetron including an anode cylinder, a cathode disposed within the anode cylinder, a plurality of vanes extending radially inside the anode which form a plurality of resonant cavities, an electrically insulative magnetron chamber wall coupled to the anode and an antenna

coupled to at least one of the vanes located within an evacuated chamber of the magnetron which provides an output of microwaves passing through the electrically insulative magnetron chamber wall when the magnetron is operating comprising:

providing at least one baffle disposed in lines of sight between the cathode and the electrically insulative magnetron chamber wall including substantially all of a periphery and a top of the electrically insulative magnetron chamber wall through which the microwaves pass; and

activating the magnetron to produce an output of microwaves through the electrically insulative magnetron chamber wall with material being emitted from the cathode during the output of microwaves being deposited on the at least one baffle instead of on the electrically insulative magnetron chamber wall.